BONNEVILLE HIGH SCHOOL (PWS 7100010) & ANNEX (PWS 7100008) SOURCE WATER ASSESSMENT FINAL REPORT

August 1, 2001

State of Idaho
Department of Environmental Quality

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for Bonneville High School & Annex, Idaho Falls, Idaho,* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The Bonneville High School & Annex drinking water system consists of two well sources. The Annex Well (7100008) has moderate susceptibility to inorganic, volatile organic, synthetic organic, and microbial contamination due to a high rating in hydrologic sensitivity, a moderate rating for system construction, and numerous potential contaminant sources. The High School Well (PWS 7100010) has high susceptibility to all categories of contaminants as a result of a high rating in hydrologic sensitivity, a high rating for system construction, and numerous potential contaminant sources. Each of the wells has recorded the inorganic contaminant arsenic at natural background levels of about 8 parts per billion. Nitrate levels have been recorded between 2.5 and 3 mg/L during the past 7 years. In September 2000, the boy's restroom attached to the Annex Well system recorded the presence of total coliform bacteria. Current water chemistry tests have recorded no other significant problems with the well water.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

For the Bonneville High School & Annex Wells, source water protection activities should focus on implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas and awareness of the potential contaminant sources in the area. Regulatory discrepancies outlined in the 1998 Sanitary Survey (High School Well) should be addressed if they have not already been corrected. Much of the designated protection areas are outside the direct jurisdiction of the Bonneville High School & Annex. Partnerships with state and local agencies, and industry groups should be established and are critical to the success of source water protection. All wells should maintain sanitary survey standards regarding wellhead protection. Also, disinfection practices should be implemented if microbial contamination becomes a problem.

Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service. A community with a fully developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Idaho Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR BONNEVILLE HIGH SCHOOL & ANNEX, IDAHO FALLS, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment also is attached.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. The Idaho Department of Environmental Quality (DEQ) recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the Bonneville High School & Annex is comprised of two ground water wells that serve approximately 1,500 people (High School) and 300 people (Annex) through three connections. The wells are located in Bonneville County, about ½ mile from each other, north of Iona Road and west of North Ammon Road (Figure 1).

Though there are no significant water chemistry problems in the ground water, there have been detections in the finished well water of the inorganic contaminant (IOC) nitrate and arsenic at levels below the current Maximum Contaminant Level (MCL). Total coliform bacteria have been detected in the distribution system, but repeat samples have never found bacteria present at the wellheads. No volatile organic contaminants (VOCs) or synthetic organic contaminants (SOCs) have been detected in the well water.

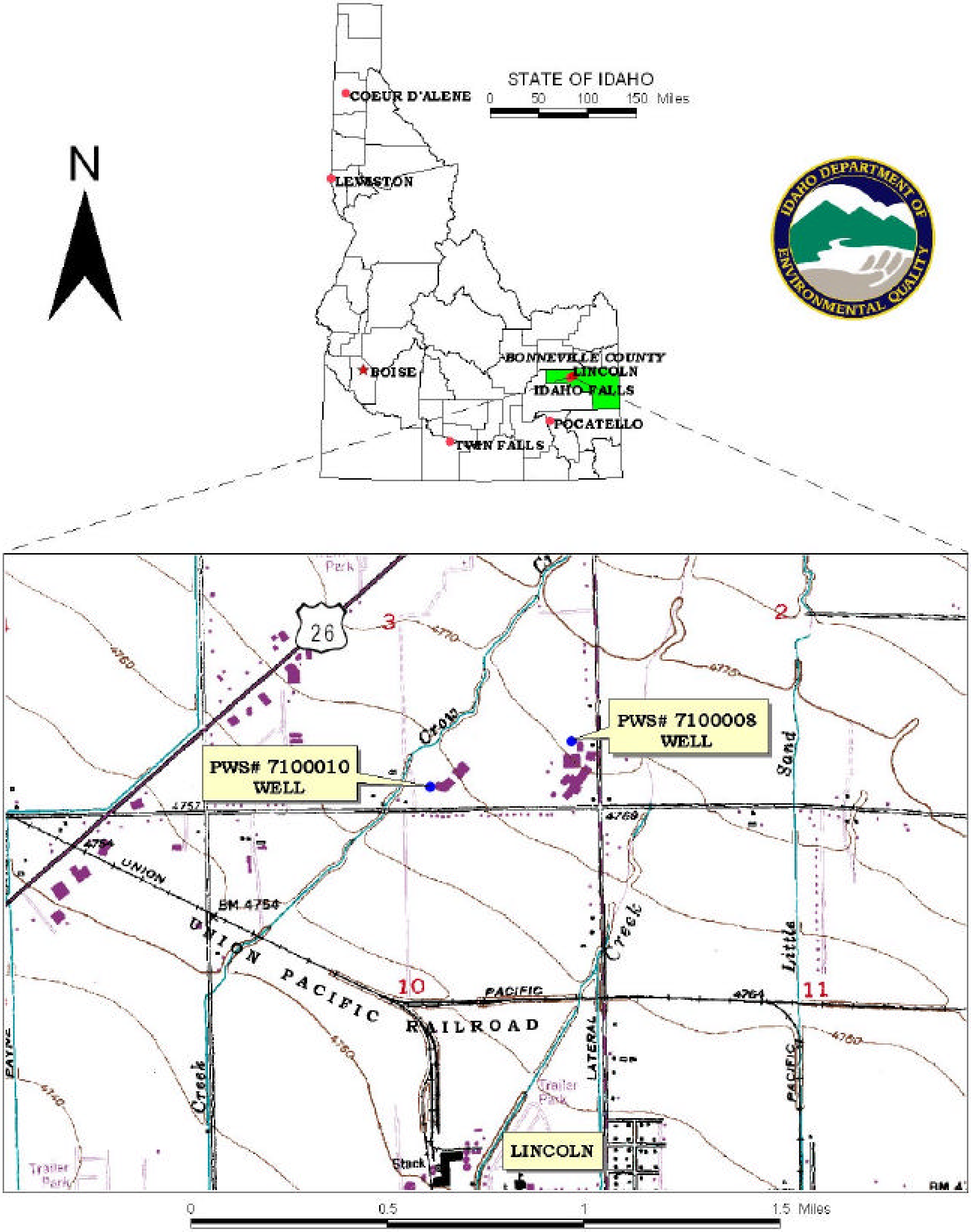
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with Washington Group, International (WGI) to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the Eastern Snake River Plain (ESRP) aquifer in the vicinity of the Bonneville High School & Annex Wells. The computer model used site specific data, assimilated by WGI from a variety of sources including the Bonneville High School & Annex's well logs, other local area well logs, and hydrogeologic reports (detailed below).

The ESRP is a northeast trending basin located in southeastern Idaho. Ten thousand square miles of the basin are primarily filled with highly fractured layered Quaternary basalt flows of the Snake River Group, which are intercalated with terrestrial and lacustrine sediments along the margins (Garabedian, 1992, p. 5). Individual basalt flows range from 10 to 50 feet in thickness and average 20 to 25 feet (Lindholm, 1996, p. 14). Basalt is thickest in the central part of the eastern plain and thins toward the margins. Whitehead (1992, p. 9) estimates the total thickness of the flows to be as great as 5,000 feet. A thin layer (0 to 100 feet) of windblown and fluvial sediments overlies the basalt.

The plain is bound on the northeast by rocks of the Yellowstone Group (mainly rhyolite) and Idavada Volcanics to the southwest. The Snake River flows along part of the southern boundary and is the only drainage that leaves the plain. Rivers and streams entering the plain from the south are tributary to the Snake River. Other than the Big and Little Wood rivers, rivers entering from the north vanish into the highly transmissive basalts of the Snake River Plain aquifer.

FIGURE 1. Geographic Location of Bonneville High School



The layered basalts of the Snake River Group host one of the most productive aquifers in the United States. The aquifer is generally considered unconfined, yet it may be locally confined in some areas because of inter-bedded clay and dense unfractured basalt (Whitehead, 1992, p. 26). Whitehead (1992, p. 22) reports that well yields of 2,000 to 3,000 gal/min are common for wells open to less than 100 feet of the aquifer. Lindholm (1996, p. 18) estimates aquifer thickness to range from several hundred feet near the plain's margin to thousands of feet near the center.

The majority of aquifer recharge results from surface water irrigation activities (incidental recharge), which divert water from the Snake River and its tributaries (Ackerman, 1995, p. 4, and Garabedian, 1992, p. 11). Natural recharge occurs through stream losses, direct precipitation, and tributary basin underflow.

Regional ground water flow is to the southwest paralleling the basin (Cosgrove et al., 1999, p. 21; deSonneville, 1972, p. 78; Garabedian, 1992, p. 48; and Lindholm, 1996, p. 23). Ground water flow direction at the local scale is thought to be highly variable due to preferential flow paths through the fractured and layered basalts.

The delineated source water assessment areas for the Bonneville High School & Annex wells can best be described as corridors approximately 15 miles long and 1 mile wide extending to the northeast of the Bonneville High School & Annex and ending at the Snake River (Figures 2 and 3). Each of the delineations only has the 3-year TOT because the Snake River is assessed to be the main source of the wells' water. The actual data used by WGI in determining the source water assessment delineation areas are available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of the Bonneville High School & Annex wellheads consists of academic uses, while the surrounding area is predominantly irrigated agriculture.

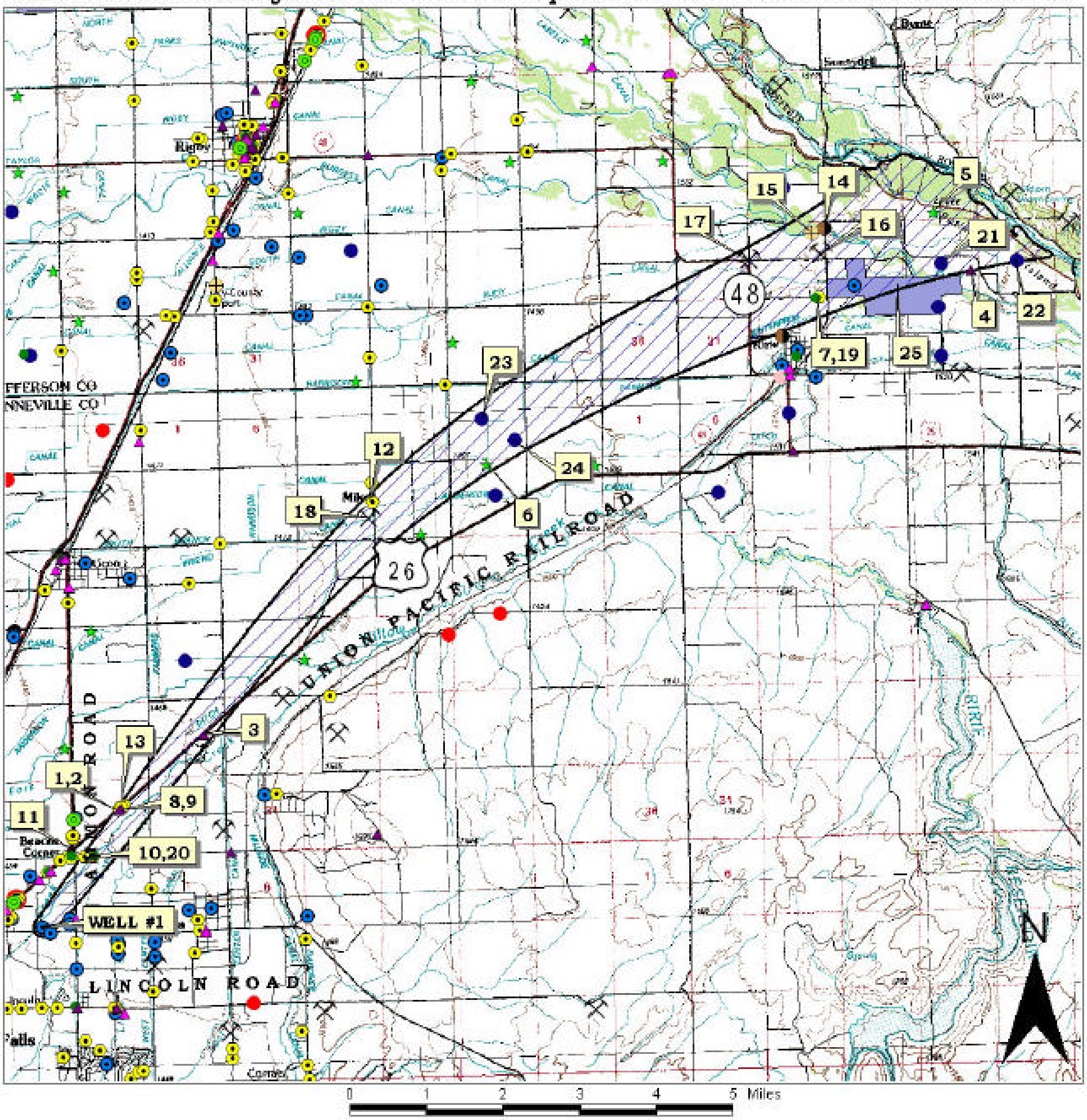
It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the <u>potential</u> for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

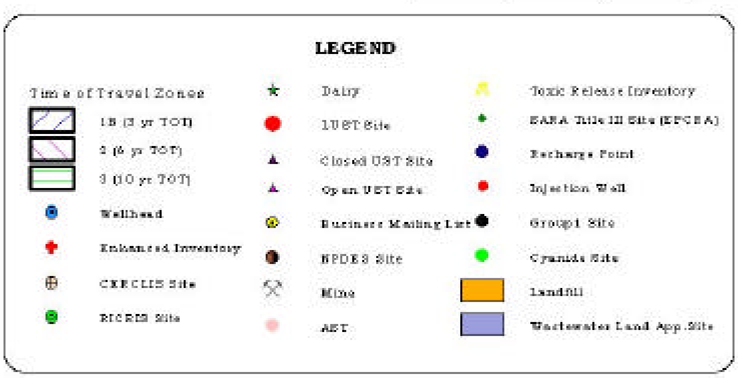
Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in April 2001. The first phase involved identifying and documenting potential contaminant sources within the Bonneville High School & Annex Source Water Assessment Areas (Figures 2 & 3) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The delineated source water areas encompass long corridors of land between the well sites and the Snake River. The High School Well has 22 potential contaminant sources on 25 sites and are listed in Table 1. The sources include underground storage tanks (USTs), two dairies, a potato processing plant, a nursery, an irrigation equipment facility, a wholesale fertilizer company, a marine manufacturer store, a concrete contractor, three gravel pits, four unused recharge wells, and a land application site. Additionally there are sites regulated under the Superfund Amendments and Reauthorization Act (SARA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), and the National Pollutant Discharge Elimination System (NPDES). The Annex Well has 17 potential contaminant sources on 18 sites and are listed in Table 2. The sources include underground storage tanks (USTs), two dairies, a potato processing plant, three gravel pits, four unused recharge wells, a land application site, and sites regulated under SARA, CERCLA, and NPDES. In addition, both delineations cross Ammon Road, Highway 26, State Highway 48, the Union Pacific Railroad, and the Snake River. As major transportation corridors, these thoroughfares provide the potential for all classes of contamination. Figures 2 and 3 show the locations of these various potential contaminant sites relative to the wellheads.

FIGURE 2. Bonneville High School Delineation Map and Potential Contaminant Source Locations





PWS# 7100010
WELL #1

Table 1. Bonneville High School Well, Potential Contaminant Inventory

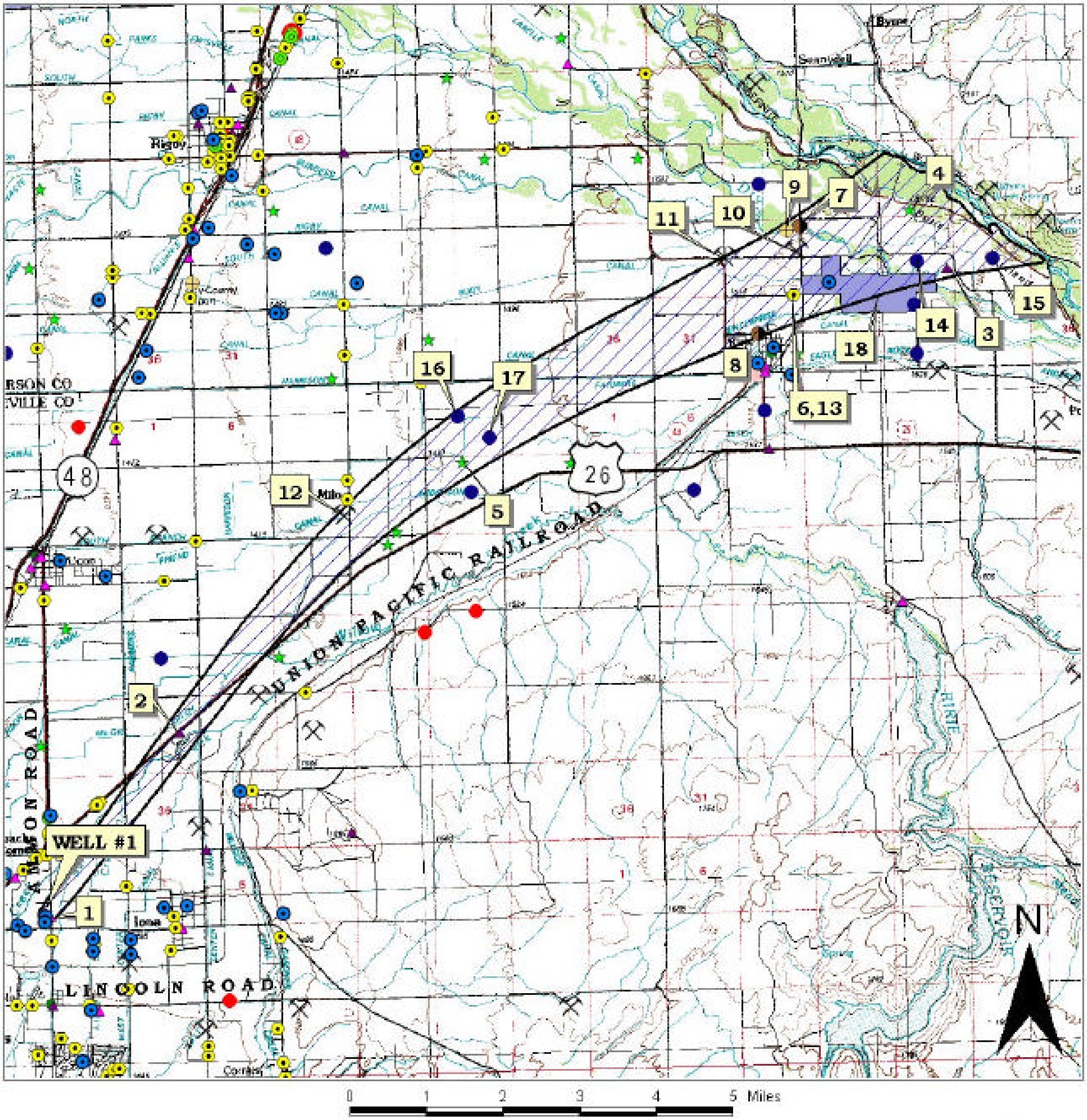
SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1	UST	0-3	Database Search	VOC, SOC
2	UST	0-3	Database Search	VOC, SOC
3	UST	0-3	Database Search	VOC, SOC
4	UST	0-3	Database Search	IOC, VOC, SOC
5	Dairy (≤ 200 cows)	0-3	Database Search	IOC, Microbial
6	Dairy (≤ 200 cows)	0-3	Database Search	IOC, Microbial
7	Potatoes – processed	0-3	Database Search	IOC, VOC, SOC, Microbial
8	Nursery	0-3	Database Search	IOC, SOC
9 (see map id #1)	Irrigation systems and equipment	0-3	Database Search	VOC, SOC
10	Fertilizer – wholesale	0-3	Database Search	IOC, VOC, SOC, Microbial
11	Marine manufacturer	0-3	Database Search	IOC, VOC, SOC
12	Concrete contractor	0-3	Database Search	IOC, VOC, SOC
13	US Forestry Department	0-3	Database Search	VOC, SOC
14	NPDES	0-3	Database Search	IOC, Microbial
15	CERCLA	0-3	Database Search	IOC, VOC, SOC
16	Sand and gravel pit	0-3	Database Search	IOC, VOC, SOC
17	Sand and gravel pit	0-3	Database Search	IOC, VOC, SOC
18	Sand and gravel pit	0-3	Database Search	IOC, VOC, SOC
19 (see map id #7	SARA	0-3	Database Search	IOC, VOC, SOC
20 (see map id #10	SARA	0-3	Database Search	IOC, VOC, SOC, Microbial
21	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
22	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
23	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
24	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
25	Land application site	0-3	Database Search	IOC, VOC, SOC, Microbial
	Ammon Road	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Highway 26	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Highway 48	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Union Pacific Railroad	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Snake River	3-10	GIS Map	IOC, VOC, SOC, Microbial

[1] UST = underground storage tank, NPDES = National Pollutant Discharge Elimination System, CERCLA = Comprehensive Environmental Response Compensation and Liability Act, SARA = Superfund Amendments and Reauthorization Act

[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead

[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

FIGURE 3. Bonneville High School Annex Delineation Map and Potential Contaminant Source Locations



PWS# 7100008
WELL #1

Table 2. Bonneville High School Annex Well, Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1	UST	0-3	Database Search	VOC, SOC
2	UST	0-3	Database Search	VOC, SOC
3	UST	0-3	Database Search	VOC, SOC
4	Dairy (≤ 200 cows)	0-3	Database Search	IOC, Microbial
5	Dairy (≤ 200 cows)	0-3	Database Search	IOC, Microbial
6	Potatoes – processed	0-3	Database Search	IOC, VOC, SOC, Microbial
7	NPDES	0-3	Database Search	IOC, Microbial
8	NPDES	0-3	Database Search	IOC, Microbial
9	CERCLA	0-3	Database Search	IOC, VOC, SOC
10	Sand and gravel pit	0-3	Database Search	IOC, VOC, SOC
11	Sand and gravel pit	0-3	Database Search	IOC, VOC, SOC
12	Sand and gravel pit	0-3	Database Search	IOC, VOC, SOC
13 (see map id #6)	SARA	0-3	Database Search	IOC, VOC, SOC
14	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
15	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
16	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
17	Recharge well – unused	0-3	Database Search	IOC, VOC, SOC, Microbial
18	Land application site	0-3	Database Search	IOC, VOC, SOC, Microbial
	Ammon Road	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Highway 26	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Highway 48	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Union Pacific Railroad	0-3	GIS Map	IOC, VOC, SOC, Microbial
	Snake River	3-10	GIS Map	IOC, VOC, SOC, Microbial

[1] UST = underground storage tank, NPDES = National Pollutant Discharge Elimination System, CERCLA = Comprehensive Environmental Response Compensation and Liability Act, SARA = Superfund Amendments and Reauthorization Act
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet protect the ground water from contamination.

Hydrologic sensitivity is high for both wells (Table 3). This is a result of the soils being in the moderately to well- drained class, the fact that the top layer of the aquifer is less than 120 feet from the surface, and that the well does not have a laterally extensive low-permeability unit to retard the downward movement of contaminants.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

The Bonneville High School Well system construction score is high. The well log, dated July 1975, shows that the casing was completed in a water-baring formation at 145 feet below ground surface (bgs) and that the open hole construction goes to 170 feet bgs into another water-baring unit. The highest production zones were within 50 feet of the water table depth. The 1998 Sanitary Survey states that the wellhead and surface seal are maintained, but the casing does not extend high enough above the finished ground surface to adequately protect the well from surface flooding.

The Bonneville High School Annex Well system construction score is moderate. The well log, dated June 1969, shows that the casing was completed in a low permeable formation at 149 feet bgs into firm lava and the annular seal was placed with cement grout to a depth of 97 feet bgs into clay. The 1996 Sanitary Survey shows that the wellhead and surface seal are maintained to standards and the well is protected from surface flooding. The highest production zone is within 60 feet of the water table depth.

The available well logs allowed a determination as to whether current public water system (PWS) construction standards are being met. Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eight-inch diameter wells require a casing thickness of at least 0.322-inches. No information was available as to the casing thickness for the High School Well. The Annex Well only has casing thickness of only 0.250 inches for the eight-inch casing used.

Potential Contaminant Source and Land Use

The wells rate high for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products), and SOCs (i.e. pesticides) and moderate for microbial contaminants (i.e. bacteria). Commercial, municipal, and agricultural land uses in the delineated source areas account for the largest contribution of points to the potential contaminant inventory rating. Microbial contaminants may be contributed from the agricultural sources in the area.

Both wells fall within the SOC priority area for the pesticide atrazine. The wells are also in a county with high levels of nitrogen fertilizer use, high herbicide use, and high total ag-chemical use. Fortunately, no significant water chemistry problems have been recorded in the finished well water. Both wells have consistently shown the IOC nitrate at levels between 2.5 and 3.0 mg/L, (the MCL is 10 mg/L) and arsenic values of about 8 parts per billion (ppb) (current MCL is 50 ppb; suggested new MCL is 10 ppb). Total coliform bacteria have been detected in the distribution system, but repeat samples have never found bacteria present at the wellheads. No VOCs or SOCs have been detected in the well water.

Final Susceptibility Ranking

A detection above a drinking water standard MCL or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. In this case, both wells automatically rate in the high category due to the nitrate MCL violations. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the High School Well rates high for all categories. The Annex Well rates moderate for all categories.

Table 3. Summary of Bonneville High School & Annex Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
High School Well	H	H	H	H	M	H	H	H	H	H
Annex Well	H	H	H	H	M	M	M	M	M	M

[1]H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility,
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

Overall, the High School Well ranks as high in susceptibility for all contaminant categories and the Annex Well ranks as moderate for all categories. The well-drained nature of the soils, the intense agricultural practices, the high county wide use of agricultural chemicals, and the existence of local business as potential contaminant sources add up to the high susceptibility ratings. The high ranking in system construction made the difference between the overall rankings of the two wells.

Though there are no significant water chemistry problems in the ground water, there have been detections in the finished well water of the IOC nitrate and arsenic at levels below the current MCL. Both wells fall within the SOC priority area for the pesticide atrazine. Total coliform bacteria have been detected in the distribution system, but repeat samples have never found bacteria present at the wellheads. No VOCs or SOCs have been detected in the well water.

Section 4. Options for Source Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully developed source water protection program will incorporate many strategies. For the Bonneville High School & Annex Wells, source water protection activities should focus on the implementation of practices aimed at reducing the leaching of agricultural chemicals from agricultural land within the designated source water areas and awareness of the potential contaminant sources in the area. Regulatory discrepancies outlined in the 1998 Sanitary Survey (High School Well) should be addressed if they have not already been corrected. Much of the designated protection areas are outside the direct jurisdiction of the Bonneville High School & Annex. Partnerships with state and local agencies, and industry groups should be established and are critical to the success of source water protection. All wells should maintain sanitary survey standards regarding wellhead protection. Also, disinfection practices should be implemented if microbial contamination of the distribution system continues to be a problem. Continued vigilance in keeping the wells protected from surface flooding can also keep the potential for contamination reduced. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the short term. Source water protection activities for agriculture should be coordinated with the Idaho Department of Agriculture, the Soil Conservation Commission, the local Soil and Water Conservation District, and the Natural Resources Conservation Service.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

Idaho Falls Regional DEQ Office (208) 528-2650

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks.

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ASuperfund@ is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RICRIS – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

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Attachment A

Bonneville High School & Annex
Susceptibility Analysis
Worksheets

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report   Public Water System Name : BONNEVILLE HIGH SCHOOL   Well# : WELL #1

Public Water System Number 7100010   08/01/2001 7:56:04 AM

1. System Construction		SCORE			
Drill Date	07/08/1975				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES	1998			
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	NO	2			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	NO	1			
Total System Construction Score		5			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		5			
3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	4	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	22	22	22	14
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	16	8	9	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	18	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		25	25	27	14

4. Final Susceptibility Source Score	15	15	15	15
5. Final Well Ranking	High	High	High	High

Ground Water Susceptibility Report   Public Water System Name : BONNEVILLE HIGH SCHOOL ANNEX   Well# : WELL #1

Public Water System Number 7100008   08/01/2001 7:55:49 AM

1. System Construction		SCORE
Drill Date	06/18/1969	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1996
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	YES	0
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
	Total System Construction Score	2

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
	Total Hydrologic Score	5

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	2	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	4	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	18	17	17	14
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	14	7	7	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	0	0	2	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	16	18	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					

Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		25	25	27	14
4. Final Susceptibility Source Score		12	12	12	12
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate